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Postcard from America

A letter from America: The ghost of Dr. Griggs' 2008;15(1):7–15

In the village of Salem, Massachusetts, in January of 1692, the daughter and the young niece of Reverend Samuel Parris fell ill. William Griggs, the village doctor, was consulted. Griggs could not explain the symptoms displayed by the children. He concluded the diagnosis could only be bewitchment. Hysteria was not yet recognized as a disease. By the time the Salem witchcraft trials concluded, Dr. Griggs' misdiagnosis had led directly to the death by hanging of 19 men and women, in addition to the deaths of seven innocents who expired in prison, not to mention the death of one poor soul named Giles Corey who refused to participate in the trial. He was crushed to death ("Peine forte et dure") as punishment.¹

Three hundred years later, pediatrician Sir Roy Meadow, a crusader for the rights of children harmed by their parents, stated, "one sudden infant death is a tragedy, two is suspicious and three is murder, until proved otherwise." His maxim was widely adopted in legal circles and came to be known as Meadow's law. Meadow's Law led to the jailing of a solicitor named Sally Clark, who was charged with the murders of her two sons. She protested her innocence, the postmortem was unremarkable, and there were no witnesses. The only basis for her conviction was the application of "Meadow's Law." Many other women were tried under similar circumstances and almost all were convicted.²

Clark appealed her conviction and it was overturned in 2003. In 2007, Clark was found dead in her home, her death attributed to alcohol poisoning. At her appeals trial, debate had centered upon flaws in Meadow's statistical analysis. In fact, these errors were so egregious that the Royal Statistical Society intervened on Clark's behalf, detailing the mathematical absurdity of Meadow's claims, which, one might say, verged on witchcraft.

The story does not end with the sorry death of Sally Clark. The issue of alternative causation was never considered at her trial, and it remained unresolved until six months ago when a group of American researchers analyzed the DNA from 43 infants previously diagnosed with SUID/SIDS (the former refers to infants under age 1 years with no detectable cause of death while SIDS is used to describe similar deaths in those under age two). Mutational analysis (PCR and cycle sequencing) of multiple channelopathy genes, all previously implicated in SUID/SIDS, was performed. SCN5A gene mutations were the most common (21%), but a number of missense containing genes for the potassium channel were also identified. It was determined that, "collectively, the pathogenic mutation rate was about 28%."³ Earlier studies had placed the figure at closer to 10%.⁴

A position paper published by the American National Association of Medical Examiners in 2007 provides vital information on the protocols to be used in SUIDS/SIDS investigation. It suggests dividing these cases into six different categories – in all but one, it is assumed that the autopsy is complete.⁵ Given what is known today, autopsies of all SUIDS/SIDS decedents are incomplete, since mutational analysis is not performed. By definition then, nearly one third of SUIDS/SIDS cases are now misclassified; if these observations can be confirmed in another large trial, the terms SUIDS and SIDS should be abandoned and all cases previously classified as such should now be classified as "cause of death undetermined."

This observation has grave implications for forensic science. The laws in most countries recognize the concept of "certainty." At criminal trials medical examiners, or other technical experts, will be asked whether they can testify, "beyond a reasonable doubt," to the truth of their statements. In the civil law, standards are less rigid, and experts need only opine "more likely than not," that they are correct.

In a case tried three-years ago in the United States, a 12-month-old child taking a cold medications for cough and runny nose, but without fever or behavioral change, took a nap and was found dead in bed several hours later. But for the presence of diphenhydramine in concentrations above that considered therapeutic in the living (though whether the term therapeutic can be applied to the dead seems unlikely), the autopsy was said to be negative.²

At trial, death was attributed to diphenhydramine poisoning. An expert testified the reported value for diphenhydramine was far above the therapeutic range. He swore that he could testify, beyond all reasonable doubt that death was due to diphenhydramine poisoning. The jury believed this analysis, and presumably, so did the judge. But would they have been so accepting had they known that without DNA analysis, there was a 30% chance of reaching the wrong verdict? Does anyone think that a 30% error rate confers the status of "beyond doubt?"

This issue is not going to go away. Some diseases can kill without leaving any traces visible to the naked eye, let alone microscope, and it is becoming increasingly obvious that they do so with some frequency. Neither justice nor public health will be served until the ability to test for mutations is made available to all practitioners. The additional costs will be large, but will be more than offset by the number of lives saved, and the number of innocents acquitted. A paper published only a few months ago, describes the simultaneous death of monozygotic twins from long-

QT syndrome⁶. Both infants carried the same SCN5A nonsense mutation, W822X; small victory for those of us who do not believe in witchcraft. But will it be enough to put an end to "Meadow's Law?"

Conflict of interest statement

None declared.

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